

Work Order ID 57040

March 17, 2010 4:39:28 PM



Page 1

Item ID: D205-634-041
Revision ID:
Item Name: Replacement Skidtube
Start Date: 17/03/2010 Start Qty: 1.00
Required Date: 06/04/2010 Req'd Qty: 1.00
Reference:

Accept



Setup Start



Stop



Cust Item ID:
Customer:



Run Start



Stop



Approvals: Process Plan: M Date: 10-3-17 Tooling: _____ Date: _____
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	----------------	--------------	--------------	---------------	---------------	------------------	----------------

Draw Nbr	Revision Nbr
D2580	Rev D

100



DC

Document Control

DOCUMENT CONTROL

Memo

Photocopy D205-634 bluefile & type labels per PPP D205-634-041 CHG002

0.00

0.00

N/A 72

110



CNC Bend 1

CNC Delta 100 Bender

BENDING MACHINE - SKIDTUBES

Memo

1-Bend as per program D2580.C on CNC Bender and Folio FT009

2-Cut tubes as per Dwg. D2580

0.00

0.00

MB/DP (16) MB 10-03-29

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

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120 Skidtubes	Memo 1- Deburr ends 2- C'sink holes as per dwg without cutting fluid 3- Prepare tube for welding, remove alodine as required. 4- Scribe batch number insied aft end of tube.	0.00 0.00							
130 QC Quality Control	QC5- Inspect part completeness to step on W/O Memo	0.00 0.00							



10-3-30

Sub 3/30

40

W/O:		WORK ORDER CHANGES					
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Process Plan:

Date:

Tooling:

Date:

Stop



QC:

Date:

SPC (Y/N):

Date:

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run HoursDraw
NumberDraw
Rev.Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

140

0.00



Skidtubes

Skidtubes

Memo

0.00

1-Weld step D2576 as per Dwg. D2580 and QSI 004

A/R ☐ ☐ Aluminum Rod

M113207

BE 10/03/31

2-Prep per QSI 005 and weld crossbolt spacers D2579 as per Dwg. D2580, QSI 004.

For D2579 spacers, weld one side, pass 3/8" drill, weld other side, pass 3/8" drill

A/R ☐ ☐ Aluminum Rod

M113207

BE 10/03/31

3-Grind welds as per Dwg D2580 Grind flush ridge made from bending

4-Drill holes for wearplates using DT 8217 & DT8937 Open holes to 19/64", adjust stopper not to hit web. Debur

5-Counterbore crossbolt spacers to 7/16" ID x 1.0" deep as per Dwg D2580. Debur holes

6-Drill pilot holes for aft cap using DT 8215 Open holes to 0.208". Debur

7-Drill pilot holes for Tow ring using DT8091, open to .640" and Debur

BE 10/04/06

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150 QC Quality Control	QC10- Inspect visual per QSI004- ground welds Memo	0.00 0.00	S 1064/06						
160 QC Quality Control	QC5- Inspect part completeness to step on W/O Memo	0.00 0.00	S 1064/06						
170 HandFinish Hand Finishing	Pressure Wash per QSI005 4.3 Memo Re-alodine tube as per QSI 005 section 4.1.2.1 do not acid etch and leave fwd cap out of solution.	0.00 0.00	BR 10-4-7						

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
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NumberDraw
Rev.Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

180



Powdercoat

Powder Coating

White Gloss(Ref:4.3.5.1) per QSI005 4.3-Alum

0.00

M113170

=> del 10/04/07

X1

Ø

Memo

START TIME:

9:00AM

OVEN TEMPERATURE:

320°F

FINISH TIME:

9:30AM

0.00

190



QC

Quality Control

QC3- Inspect Part Finish

0.00

OK 10-4-13

①

Memo

0.00

W/O:		WORK ORDER CHANGES					
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Process Plan:

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Tooling:

Date:

Run Start



QC:

Date:

SPC (Y/N):

Date:

Stop

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run HoursDraw
NumberDraw
Rev.Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

200

0.00



HandFinish

Memo

0.00

Hand Finishing

1-Install inserts & wearplates & Gaskets as per Dwg. D2580. Use a drop of Sikaflex on insert holes before installing wearplates
A/R ☐ ☐ ☐ Sikaflex-291 *M112429*
Sikaflex expire date: *10/08*

2-Coat D2594-3 O' rings with Petroleum Jelly and install on D2594-1 plugs as per Dwg D2580

3-Inspect for foreign object per QSI 024

4-Install 2855 Aft Cap as per Dwg D2580 and seal Fwd Step & Aft Cap with Sikaflex. Clean excess adhesive
A/R ☐ ☐ ☐ Sikaflex-291 *M112429*
Sikaflex expire date: *10/08*

5-Wing Walk as per Dwg D2580 and QSI 005 4.4
Batch: *M113545*

OK 10-11-13 ①

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Required Date: 06/04/2010 Req'd Qty: 1.00



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Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start



QC:

Date:

SPC (Y/N):

Date:

Stop

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run HoursDraw
NumberDraw
Rev.Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

210



QC

Quality Control

QC5- Inspect part completeness to step on W/O

0.00

Memo

0.00

Inspect Aft Cap, Fwd Step and Wing Walk of work to Current Step Inspect for Foreign objects per QSI 024

8/10/04/14



220



Packaging

Packaging

Packaging

0.00

Memo

0.00

Identify and pack for shipping as per PPPD205-634-041

Location:

PPP Rev:

PAP 57618

5

10/04/14

230



QC

Quality Control

QC21- Final Inspection - Work Order Release

0.00

Memo

0.00

10/04/15

MF

10-4-14

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 IPP Rev. O 06.02.28 Added paperwork EC
 IPP Rev:P 07-07-09 SS Wearplates & Gaskets JLM

Start Date: 17/03/2010

Required Date: 06/04/2010

Start Qty: 1.00

Required Qty: 1.00

D2580-1



205 Skidtube bent detail

Manufactured No 110 Each 6.0000 1.0000



B-56795 MR 10-03-29

Warehouse
Location

Loc Qty

Loc Code

Main Warehouse

LG

6

54541

2

56667

2

56767

2

D2576-3



Step (maching detail)

Manufactured No 140 Each 127.0000 1.0000



Warehouse
Location

Loc Qty

Loc Code

Main Warehouse

LG

127

46661

80

52215

47

1 BE 10/03/31

W/O:		WORK ORDER CHANGES					
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Start Date: 17/03/2010

Required Date: 06/04/2010

Start Qty: 1.00

Required Qty: 1.00

D2579



Crossbolt Spacer

Manufactured No

140

Each

188.0000

20.0000



Warehouse

Location

Main Warehouse

LG

Loc Qty

Loc Code

188

43988

4

46434

4

46956

2

47797

9

48272

2

51314

71

51315

30

51525

4

53780

3

54543

18

56715

41

B 57052

(20)

BE 10/03/31

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Start Date: 17/03/2010

Required Date: 06/04/2010

Start Qty: 1.00

Required Qty: 1.00

D2855

Manufactured No

200

Each

139.0000

1.0000

Cap

Warehouse

Loc Qty

Loc Code

Location

Main Warehouse

FP6

1

56613

1

Main Warehouse

ST026

138

50513

1

50770

1

51539 ✓

37

53791

99

AN3-5A

Purchased

No

200

Each

1,397.000

2.0000

Bolt

Warehouse

Loc Qty

Loc Code

Location

Main Warehouse

ST350

1397

100188 ✓

188

105057 ✓

1209

1 BR 10-4-13.

2 BR 10-4-13

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Dart Aerospace Ltd

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Start Date: 17/03/2010

Required Date: 06/04/2010

Start Qty: 1.00

Required Qty: 1.00

AN960JD10L



Washer

Purchased No 200 Each 3,025.000 2.0000



<u>Warehouse</u>	<u>Loc Qty</u>	<u>Loc Code</u>
<u>Location</u>		
Main Warehouse		
ST348	3025	
101291	16	
105793	49	
110985 ✓	2960	

ALS7-1032-130



Insert

Purchased No 200 Each 986.0000 50.0000



<u>Warehouse</u>	<u>Loc Qty</u>	<u>Loc Code</u>
<u>Location</u>		
Main Warehouse		
ST282	986	
108606	52	
111529	130	
111779	34	
112772	11	
113238 ✓	759	

2 PR 10-4-13.

50. PR 10-4-13.

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Start Date: 17/03/2010

Required Date: 06/04/2010

Start Qty: 1.00

Required Qty: 1.00

AN3C4A



BOLT

Purchased No 200 Each 1,193.000 50.0000



Warehouse	Loc Qty	Loc Code
Location		
Main Warehouse		
ST350	1193	
112314	13	
112720	12	
112724	3	
112829	1	
112991	2	
113121	64	
113226 ✓	244	
113644	12	
113749	11	
114103	331	
114108	500	
114330		

50 48 BL 10-4-13
 2 BL 10-4-13.

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Start Date: 17/03/2010

Required Date: 06/04/2010

Start Qty: 1.00

Required Qty: 1.00

AN960C10L Purchased No 200 Each 388.0000 50.0000



washer

<u>Warehouse</u>	<u>Loc Qty</u>	<u>Loc Code</u>
<u>Location</u>		
OFFSHORE	113 524	
FG	100	
103585	100	
Main Warehouse		
ST	288	
112116	128	
112612	160	

50 PR 10-4-13.

D3566-13 Manufactured No 200 Each 66.0000 1.0000



Gasket

<u>Warehouse</u>	<u>Loc Qty</u>	<u>Loc Code</u>
<u>Location</u>		
Main Warehouse		
FP	64	
53461 ✓	64	
Main Warehouse		
ST	2	
45717	1	
50265	1	

1 PR 10-4-13.

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Start Date: 17/03/2010

Required Date: 06/04/2010

Start Qty: 1.00

Required Qty: 1.00

D3566-5 Manufactured No 200 Each 14.0000 1.0000
 Gasket

Warehouse	Loc Qty	Loc Code
<u>Location</u>		
Main Warehouse		
FP19 56829	11	
55335	11	
Main Warehouse		
ST	3	
36113	1	
46186	1	
51260	1	

1 BR 10-4-13

D3566-1 Manufactured No 200 Each 19.0000 2.0000
 Gasket

Warehouse	Loc Qty	Loc Code
<u>Location</u>		
Main Warehouse		
* FP 56825	14	
52512	3	
54480	1	
55011	1	
56532	9	
Main Warehouse		
ST	5	
46349	1	
51218	1	
51259	3	

2. BR 10-4-13

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Picklist Print

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Page 8

Work Order ID: 57040

Parent Item: D205-634-041

Parent Item Name: Replacement Skidtube

Comments: IPP Rev:N 02.08.28 FP was QC5 in Step 27; Added QC5 to Step 30 KJ
 IPP Rev P 10.02.19 per PAR09-043 EC verified by:DD
 IPP Rev. O 06.02.28 Added paperwork EC
 IPP Rev:P 07-07-09 SS Wearplates & Gaskets JLM

Start Date: 17/03/2010

Required Date: 06/04/2010

Start Qty: 1.00

Required Qty: 1.00

D3564-11 Manufactured No 200 Each 5.0000 1.0000
 Wearshoe

Warehouse	Loc Qty	Loc Code
<u>Location</u>		
Main Warehouse		
FP19 57259	3	
56834	3	
Main Warehouse		
ST	2	
45823	1	
50112	1	

1 PR 10-4-13

D3564-13 Manufactured No 200 Each 27.0000 1.0000
 Wearshoe

Warehouse	Loc Qty	Loc Code
<u>Location</u>		
Main Warehouse		
FP17	15	
56285 ✓	15	
Main Warehouse		
ST	12	
45409	2	
46495	10	

1 PR 10-4-13

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Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____
 Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

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Work Order ID: 57040



Parent Item: D205-634-041



Parent Item Name: Replacement Skidtube

Start Date: 17/03/2010

Required Date: 06/04/2010

Comments: IPP Rev:N 02.08.28 FP was QC5 in Step 27; Added QC5 to Step 30 KJ
 IPP Rev P 10.02.19 per PAR09-043 EC verified by:DD
 IPP Rev. O 06.02.28 Added paperwork EC
 IPP Rev:P 07-07-09 SS Wearplates & Gaskets JLM

Start Qty: 1.00

Required Qty: 1.00

D3564-9 Manufactured No 200 Each 12.0000 1.0000



Wearshoe



Warehouse Loc Qty Loc Code

Location

Main Warehouse

FP19

57260

11

55334

11

Main Warehouse

ST

1

44659

1

D3564-5 Manufactured No 200 Each 26.0000 1.0000



Wearshoe



Warehouse Loc Qty Loc Code

Location

OFFSHORE

FG

2

34806

2

Main Warehouse

FP19

23

55024

11

55333 ✓

12

Main Warehouse

ST

1

45824

1

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1 PR 10-4-13

1 PR 10-4-13.

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Picklist Print

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Page 10

Work Order ID: 57040

Parent Item: D205-634-041

Parent Item Name: Replacement Skidtube

Comments: IPP Rev:N 02.08.28 FP was QC5 in Step 27; Added QC5 to Step 30 KJ
 IPP Rev P 10.02.19 per PAR09-043 EC verified by:DD
 IPP Rev. O 06.02.28 Added paperwork EC
 IPP Rev:P 07-07-09 SS Wearplates & Gaskets JLM

Start Date: 17/03/2010

Required Date: 06/04/2010

Start Qty: 1.00

Required Qty: 1.00

D2594-3 Manufactured No 200 Each 420.0000 16.0000



O-Ring, 205 Skidtube

<u>Warehouse</u>	<u>Loc Qty</u>	<u>Loc Code</u>
<u>Location</u>		
Main Warehouse		
FP	420	
51613	27	
52562	13	
55546 ✓	380	

D2594-1 Manufactured No 200 Each 513.0000 16.0000



Plug, 205 Skidtube

<u>Warehouse</u>	<u>Loc Qty</u>	<u>Loc Code</u>
<u>Location</u>		
Main Warehouse		
FP	513	
42221	16	
42807	92	
43884	3	
46435	2	
51527	9	
51757	6	
54008	1	
54643	15	
55002 ✓	369	

16 BR 10-H-13

16 BR 10-H-13.

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W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

DART**RELEASED**
07-06-28 #

DESIGN <i>[Signature]</i>	DRAWN BY <i>[Signature]</i>	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED <i>[Signature]</i>	APPROVED <i>[Signature]</i>	DRAWING NO. D2580	REV. D SHEET 1 OF 3
DATE 07.02.27		TITLE 205 SKIDTUBE ASSEMBLY	SCALE NTS
A	96.09.16	NEW ISSUE	
B	96.12.02	AS MANUFACTURED	
C	98.08.26	REDRAWN, INCLUDED DEO 9094/9097	
D	07.02.27	CHANGE TO SS WEARPLATES AND GASKETS, INCLUDE DEO 9124/9183	

QTY -041	QTY -045	Part Number	Description
X		D2580-041	SKIDTUBE ASSEMBLY
	X	D2580-045	SKIDTUBE ASSEMBLY
1	1	D2500-1-190	EXTRUSION
1	1	D2576-3	STEP
20	24	D2579	CROSS BOLT SPACER
16	16	D2594-1	PLUG
16	16	D2594-3	O-RING
1	1	D2596	205 WEB
1	1	D2855	AFT CAP
1	1	D3564-5	WEARSHOE
1	1	D3564-9	WEARSHOE
1	1	D3564-11	WEARSHOE
1	1	D3564-13	WEARSHOE
2	2	D3566-1	GASKET
1	1	D3566-5	GASKET
1	1	D3566-13	GASKET
50	50	ALS7-1032-130 or AKS7-1032-130 or AKS4-1032-130 or AELS-1032-130	INSERT
50	50	AN3C4A	BOLT
2	2	AN3-5A	BOLT
50	50	AN960C10L	WASHER
2	2	AN960JD10L	WASHER

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RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 57040

BY 10-3-25

GENERAL NOTES:

- 1) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
- 2) ALL DIMENSIONS ARE IN INCHES
- 3) INSERT D2596 WEB TO LOCATION SHOWN OFF AFT END OF SKIDTUBE AND BOND WEB INTO OUTER TUBE WITH NON-STRUCTURAL SIKAFLEX-241 ADHESIVE PER DART QSI 015 BEFORE BENDING. ENSURE HOLES LINE-UP.
- 4) BEND AS A SMOOTH RADIUS STARTING WITH A MAXIMUM CENTERLINE RADIUS OF 60 AND ENDING WITH A MINIMUM RADIUS OF 30. A MAXIMUM REDUCTION OF 0.200 IN DIAMETER IS ALLOWABLE IN THE BENT PORTION OF THE TUBE.
- 5) USE DART DRILL TEMPLATE TD2577-205 TO LOCATE AND DRILL Ø0.297 HOLES FOR WEARSHOE INSERTS. INSTALL ALS7-1032-130 PER SECTION D-D (50 PLACES) AFTER FINISH. INSTALL AN3C4A BOLTS AND AN960C10L WASHERS WITH SIKAFLEX-241/-291.
- 6) WELDING TO BE DONE PER DART QSI 004.
- 7) FINISH:
SEE NOTES ON
PAGE 2 FOR D2580-041 AND
PAGE 3 FOR D2580-045
- 8) INSERT D2594-1 PLUG C/W D2594-3 O-RING IN HOLES MARKED 'P' (BOTH SIDES OF TUBE) AFTER FINISH (16 PLACES).

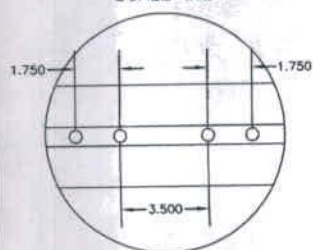
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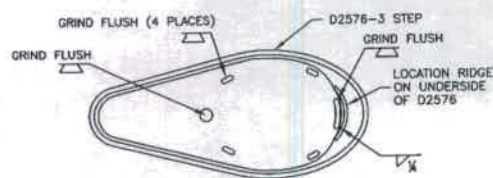


W/O 57040

DETAIL E
SCALE 5:24

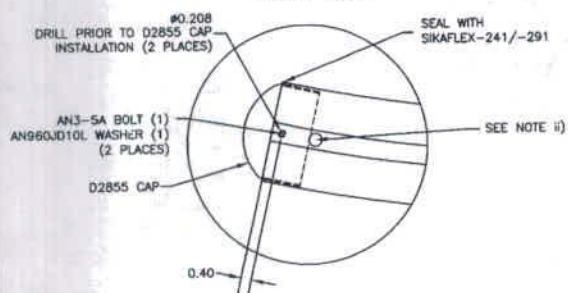


DETAIL F
SCALE 5:24

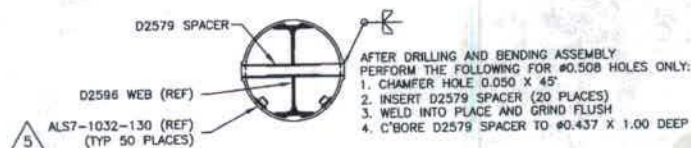


RELEASED
07-06-28

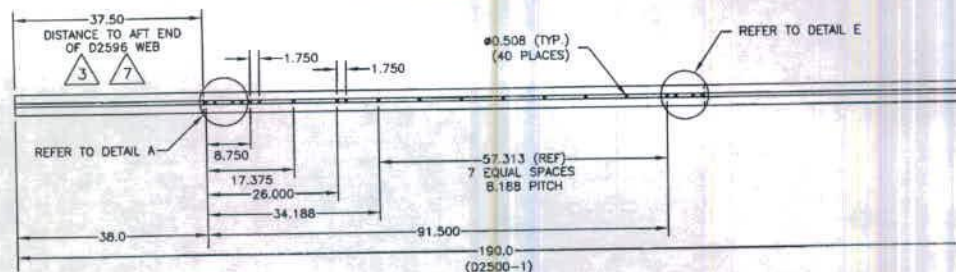
DETAIL G
SCALE 5:24



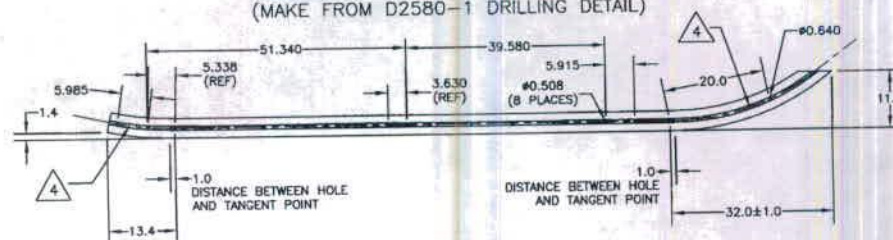
SECTION H-H
SCALE 5:24



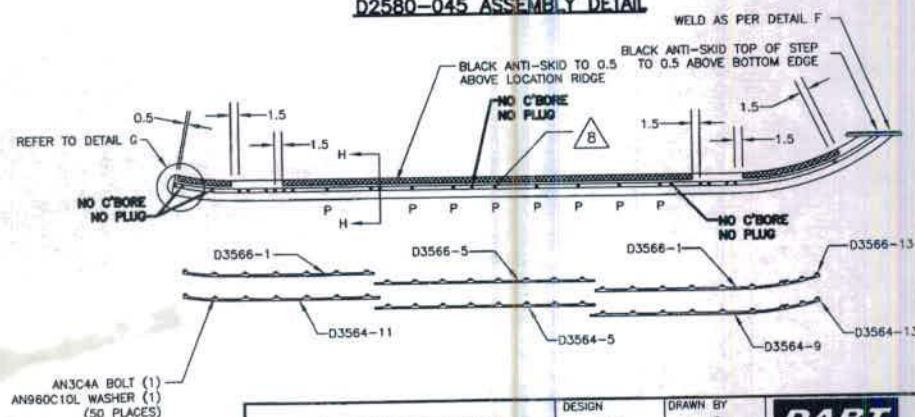
D2580-1 DRILLING DETAIL



D2580-5 BENDING AND CUTTING DETAIL
(MAKE FROM D2580-1 DRILLING DETAIL)



D2580-045 ASSEMBLY DETAIL



D2580-045 NOTES

- i) FINISH: ACID ETCH, ALODINE PER DART QSI 005 4.1 PRIOR TO INSERTING D2596 WEB
POWDER COAT ENTIRE ASSEMBLY GREEN (REF. 4.3.5.8) PER DART QSI 005 4.3
BLACK ANTI-SKID PAINT AS INDICATED PER DART QSI 005 4.4
- ii) IT IS ACCEPTABLE TO GRIND A RELIEF IN THE D2855 AFT CAP TO PREVENT INTERFERENCE WITH THE SPACER AT THIS LOCATION

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DESIGN RH	DRAWN BY RH	DART	DART AEROSPACE LTD. WILMINGTON, ONTARIO, CANADA
CHECKED H	APPROVED H	DRAWING NO. D2580	REV. 0 SHEET 3 OF 3
DATE 07.02.27		TITLE 205 SKIDTUBE ASSEMBLY	SCALE 1:24

11

NO. 227

AWS D17.1.2001
QUALIFICATION TEST RECORD

Name: Barday Elliott
Job number: 56925
Part number: D205-634-011
Description: 205 skid tube
Welding Process: Tig[☒] Mig[]
Base material: Aluminum
Current: AC[☒] DC[]

TEST REQUIREMENTS AND RESULTS

Visual: pass[☒] fail[]
Penetration: pass[☒] fail[]

UNACCEPTABLE

Cracks: pass[☒] fail[]
Undercut: pass[☒] fail[]
Pin holes: pass[☒] fail[]
Overlap (cold lap): pass[☒] fail[]
Porosity (surface): pass[☒] fail[]
Coloration: pass[☒] fail[]

Qualifier [Signature] Date of Test Coupon 10-03-19

Welder Barday Elliott Date of Test Coupon 10-03-19

The above named individual is qualified in accordance with AWS D17.1.2001 to weld

